

What is claimed is:

5 Sub A1 1. A polishing apparatus, comprising:
a rotatable member rotatable about a first axis;
at least two polishing surfaces arranged at respective angular positions about said first axis;

10 at least one substrate head assembly supported on said rotatable member and capable of holding thereon a substrate in contact with a selected one of said polishing surfaces and affording relative linear movement between said selected polishing surface and said substrate head assembly while said substrate held by said substrate head is engaged with said selected polishing surface.

15 2. The polishing apparatus of Claim 1, wherein said at least two polishing surfaces are movable.

20 3. The polishing apparatus of Claim 2, wherein said at least two polishing surfaces are rotatable.

25 4. The polishing apparatus of Claim 3, wherein said at least one substrate head assembly comprises at least two substrate head assemblies capable of holding thereon respective substrates.

5. The polishing apparatus of Claim 4, wherein said at least two substrate head assemblies are simultaneously positionable over respective ones of said at least two polishing surfaces.

6. The polishing apparatus of Claim 5, wherein at least two of said substrate head assemblies are linearly and reciprocally movable in said rotatable support member

independently of each other.

7. The polishing apparatus of Claim 6, further comprising at least two motors mounted on said rotatable support member and coupled to respective ones of said substrate head assemblies to move them linearly and reciprocally in said rotatable support member.

8. The polishing apparatus of Claim 7, wherein said substrate head assemblies are slidably mounted in respective linear slots formed in said rotatable support member, and further comprising:

at least two lead screws independently rotated by respective ones of said motors; and threaded members mounted to respective ones said substrate head assemblies and threadably and rotatably receiving respective ones of said lead screws.

9. The polishing apparatus of Claim 8, wherein said slots have open ends in said rotatable support member opposite said first axis and wherein each of said substrate head assemblies includes a respective head motor, and a substrate holder for selectively holding a substrate, wherein said substrate head assemblies are insertable in said slots from said open ends with said head motors disposed above and extending laterally of said slots and with said substrate holders disposed below and extending laterally of said slots.

10. The polishing apparatus of Claim 9, wherein said substrate head assemblies are linearly and reciprocally movable along respective radii of said rotatable support member passing through said first axis.

11. The polishing apparatus of Claim 10, wherein each of said head assemblies includes a vertically movable substrate head providing sufficient vertical movement to engage and disengage a substrate held thereon from said polishing surface.

19. A polishing apparatus, comprising:

a support member rotatable about a first axis;

at least two polishing surfaces arranged about said first axis;

at least two substrate head assemblies each capable of holding thereon at least one

substrate in contact with a selected one of said polishing surfaces and each being supported on
and linearly and reciprocally movable in said carousel.

20. The polishing apparatus of Claim 19, wherein said substrate head assemblies are
linearly and reciprocally movable in said support member independently of each other.

21. The polishing apparatus of Claim 20, further comprising at least two motors
mounted on said support member and coupled to respective ones of said substrate head
assemblies to move them linearly and reciprocally in said carousel.

22. The polishing apparatus of Claim 21,
wherein said substrate head assemblies are slidably mounted in respective linear slots
formed in said support member, and

further comprising:

at least two lead screws independently rotated by respective ones of said
motors; and

threaded members mounted to respective ones said substrate head assemblies
and threadably and rotatably receiving respective ones of said lead screws.

23. The polishing apparatus of Claim 22, wherein said slots have open ends in said
support member opposite said first axis and wherein each of said substrate head assemblies
includes a respective head motor, and a substrate holder for selectively holding a substrate,
wherein said substrate head assemblies are insertable in said slots from said open ends with
said head motors disposed above and extending laterally of said slots and with said substrate

holders disposed below and extending laterally of said slots.

Sub B7
5 24. The polishing apparatus of Claim 23, wherein each of said substrate head assemblies is capable of rotating about a head axis of said substrate head assembly, said head being substantially parallel to said first axis.

19 25. The polishing apparatus of Claim 24, wherein said substrate head assemblies are linearly and reciprocally movable along respective radii of said support member passing through said first axis.

10 20 19 26. The polishing apparatus of Claim 25, wherein each of said head assemblies includes a vertically movable substrate head providing sufficient vertical movement to engage and disengage a substrate held thereon from said polishing surface.

5 Add A6
B9

Sub 3 12. A polishing method usable in an apparatus comprising a rotatable member rotatable about a first axis, at least one substrate head assembly supported on said rotatable member, and at least two polishing surfaces arranged below said rotatable support at respective angular positions about said first axis, said method comprising the steps of:

5 mounting a substrate onto a first one of said at least one substrate head assembly;
rotating said rotatable member to a position so that said substrate overlies a selected one of said polishing surfaces;

engaging said substrate with said selected polishing surface; and

10 imparting relative linear movement between said selected polishing surface and said first substrate head assembly while said substrate is engaged with said selected polishing surface.

13. The method of Claim 12, wherein said at least one substrate assembly comprises at least two substrate head assemblies.

15 14. The method of Claim 13, wherein said imparting step moves said first substrate head assembly along a radius with respect to said first axis.

20 15. The method of Claim 14, wherein said imparting step includes moving said polishing surface.

16. The method of Claim 15, wherein said imparting step includes moving said polishing surface.

25 17. The method of Claim 16, wherein said moving step includes rotating said polishing surface about an axis parallel to said first axis.

18. The method of Claim 17, wherein said substrate head assemblies can rotate substrates attached thereto about second axes parallel to said first axis.